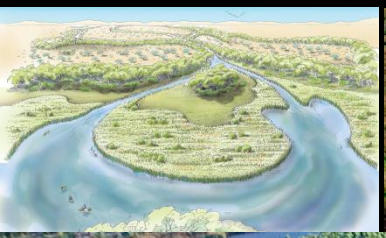
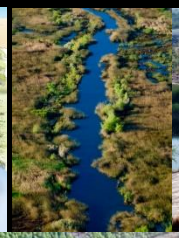
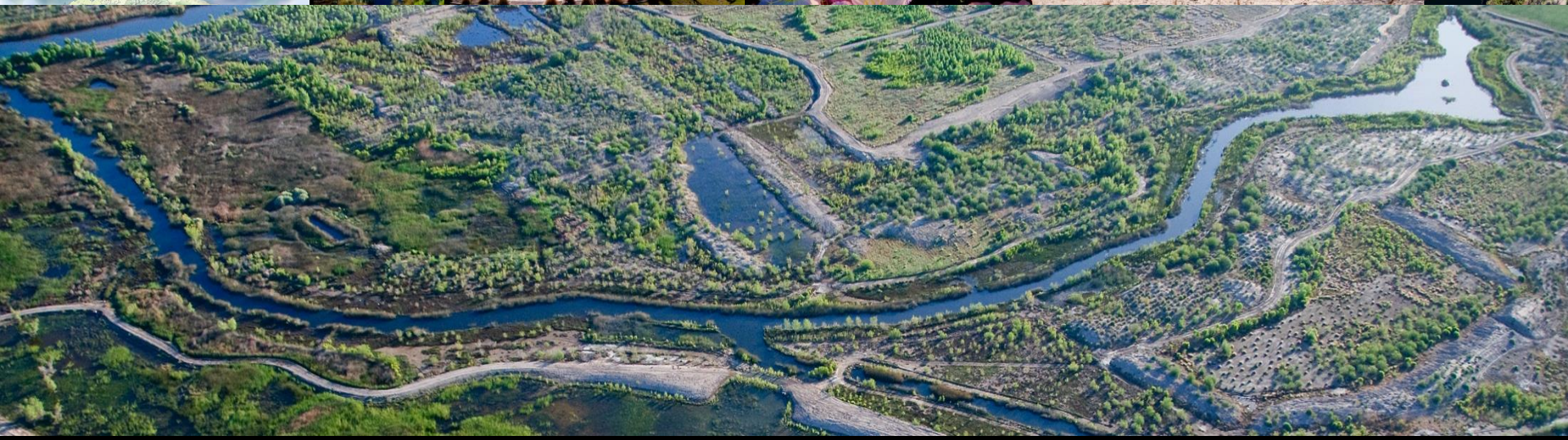
Fred Phillips Consulting, LLC

Landscape Architecture **Ecological Restoration** **Wildlife Biology** **Land Management**



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Restoring the Rio Grande

Heidi Trathnigg
FPC 2015

Two Areas along the Rio Grande

- BJ Bishop Wetlands
  - Presidio, TX
- Terlingua Creek
  - Big Bend NP

BJ Bishop Wetlands

BJ Bishop Wetland Restoration

Project Area


BORDER ZONE INTERNATIONAL
UFO FESTIVAL
PRESIDIO - OJINAGA
UFOBORDERZONE.COM

Presidio County

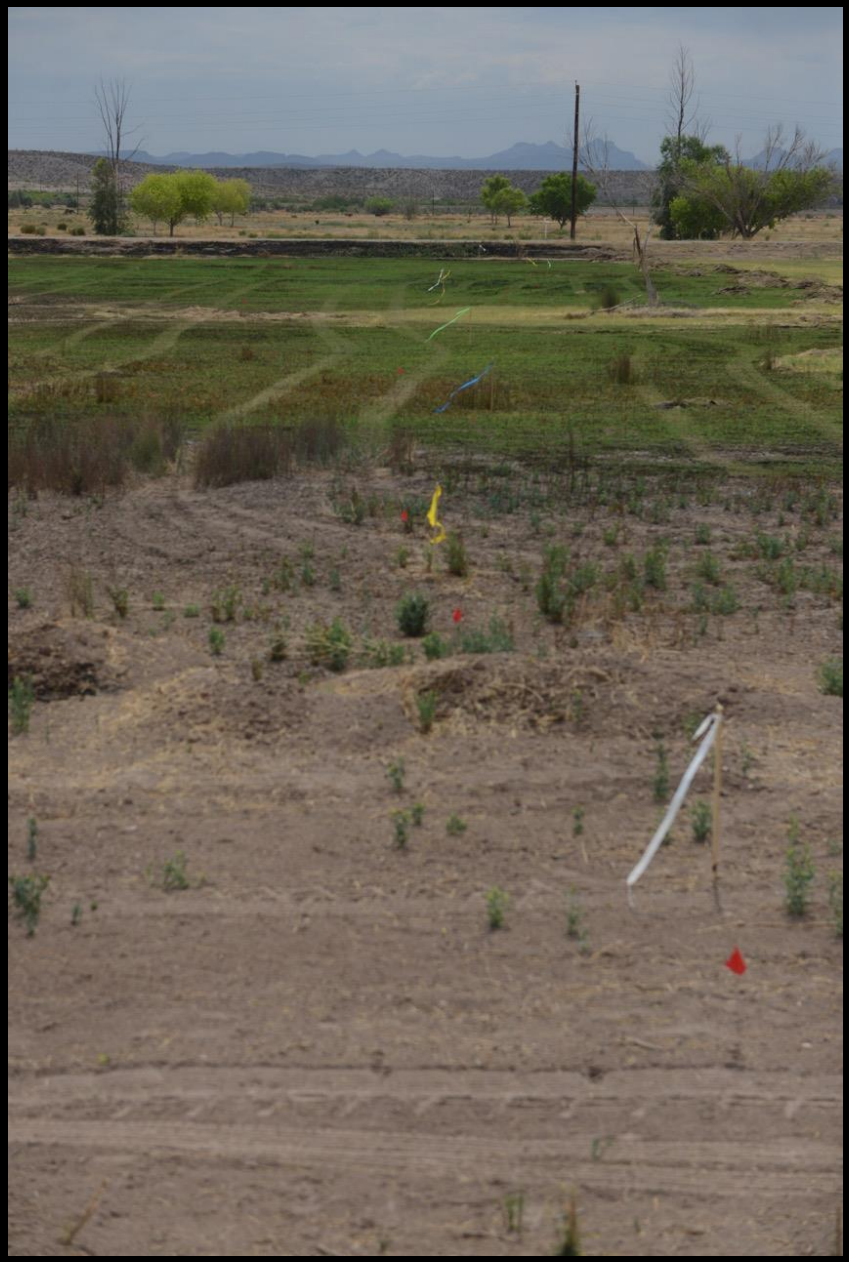
- Poorest County in TX, 13th highest unemployment rate in Nation
- Oldest continuously farmed area in North America
- Fallow agricultural land
- Few wetlands along the Rio Grande- those that exists are invaded by invasive vegetation

BJ Bishop Wetlands

- Land owner, Terry Bishop, approached by Trans Pecos Water and Land Trust- land easement
- EDF approached FPC to consult in 2009
- 800 acres fallow agricultural land
- Fund-raising, planning and having fun
- Received NAWCA and donated funds to restore 24.5 acres- first in area

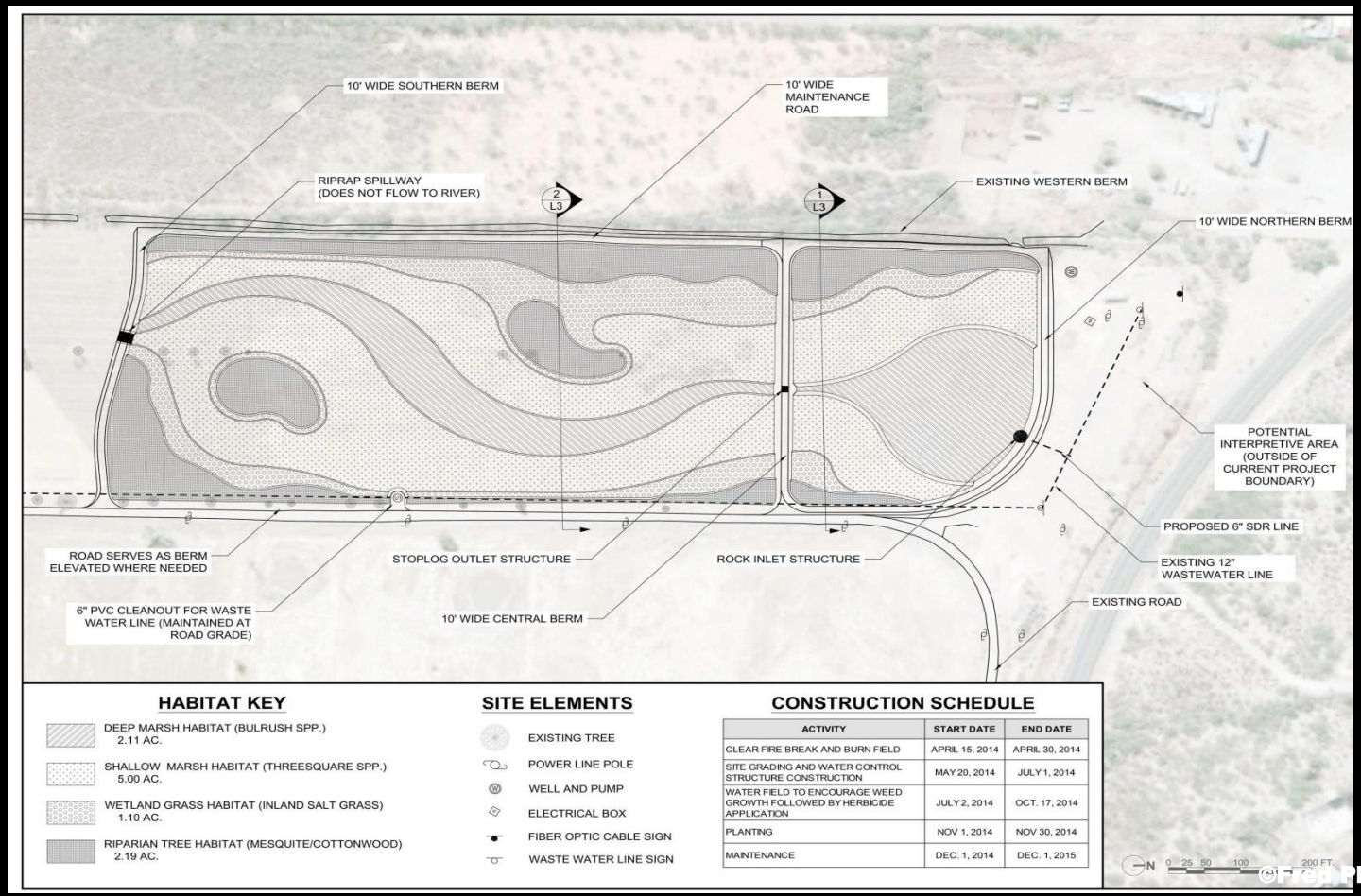
Project Goals

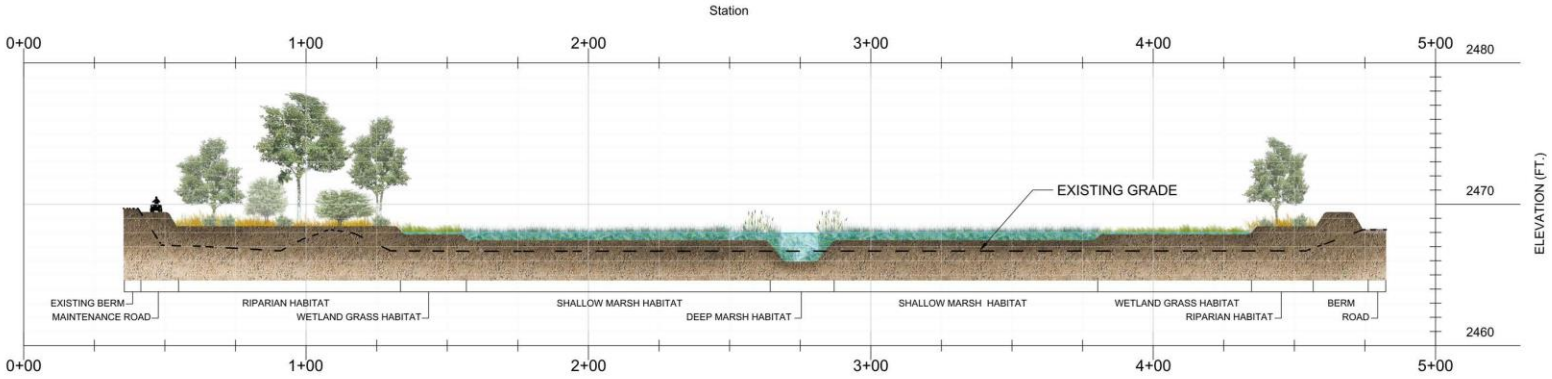
- Establish 24.5 acre wetland and riparian habitat complex
- Enhance habitat for migrating and local birds
- Establish support and a baseline for other projects in the region
- Provide recreation opportunities-wildlife viewing



Irrigation

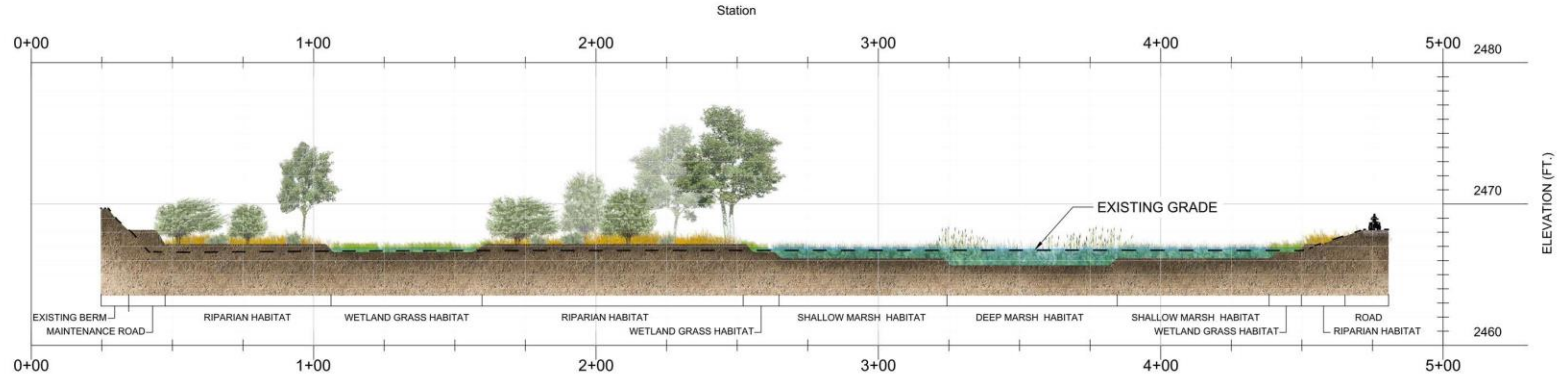
- Treated effluent water from City of Presidio treatment plant (328.5 acre feet annually)
- City of Presidio donate water for as long as supply lasts





1 / L3 NORTH IRRIGATION CELL CROSS SECTION

SCALE IS 1" = 20' - VERTICAL EXAGGERATION OF 5 (PLANTS TO SCALE)



2 / L3 SOUTH IRRIGATION CELL CROSS SECTION

SCALE IS 1" = 20' - VERTICAL EXAGGERATION OF 5 (PLANTS TO SCALE)

GENERAL NOTES

No.	Revision/Issue	Date

DESIGN FIRMS

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george@oxbow-eco-eng.com

PROJECT NAME AND ADDRESS

B.J. Bishop Wetlands
Highway 170
Presidio, Texas
Trans Pecos Water and Land Trust
c/o 725 Patterson Avenue
Austin, TX 78703
p: 512-797-4477

DRAWING

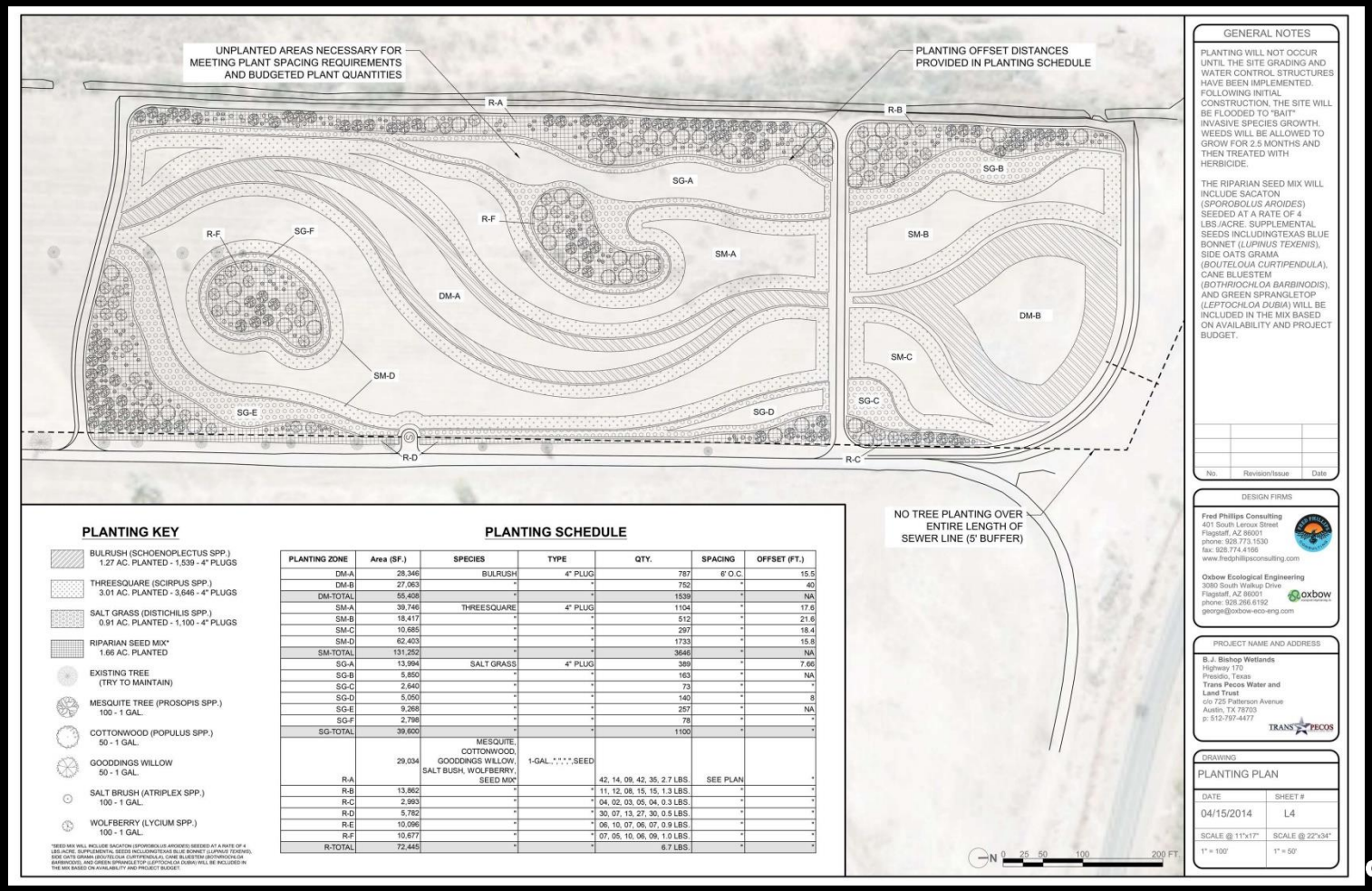
SECTION DRAWINGS

DATE	SHEET #
04/15/2014	L3
SCALE @ 11"x17"	SCALE @ 22"x34"
1" = 40'	1" = 20'

Grading (partially complete)

Planting Design

- 95% of plant material collected on site
- 9 acre wetland pool, 9.5 acre cottonwood/willow, and 6 acre mesquite



Consulting, LLC


12.04.2008 17:00

Current Status

- Design complete and approved
- Permits in place
- Grading initiated and will be finished in March
- Planting to occur in March-April

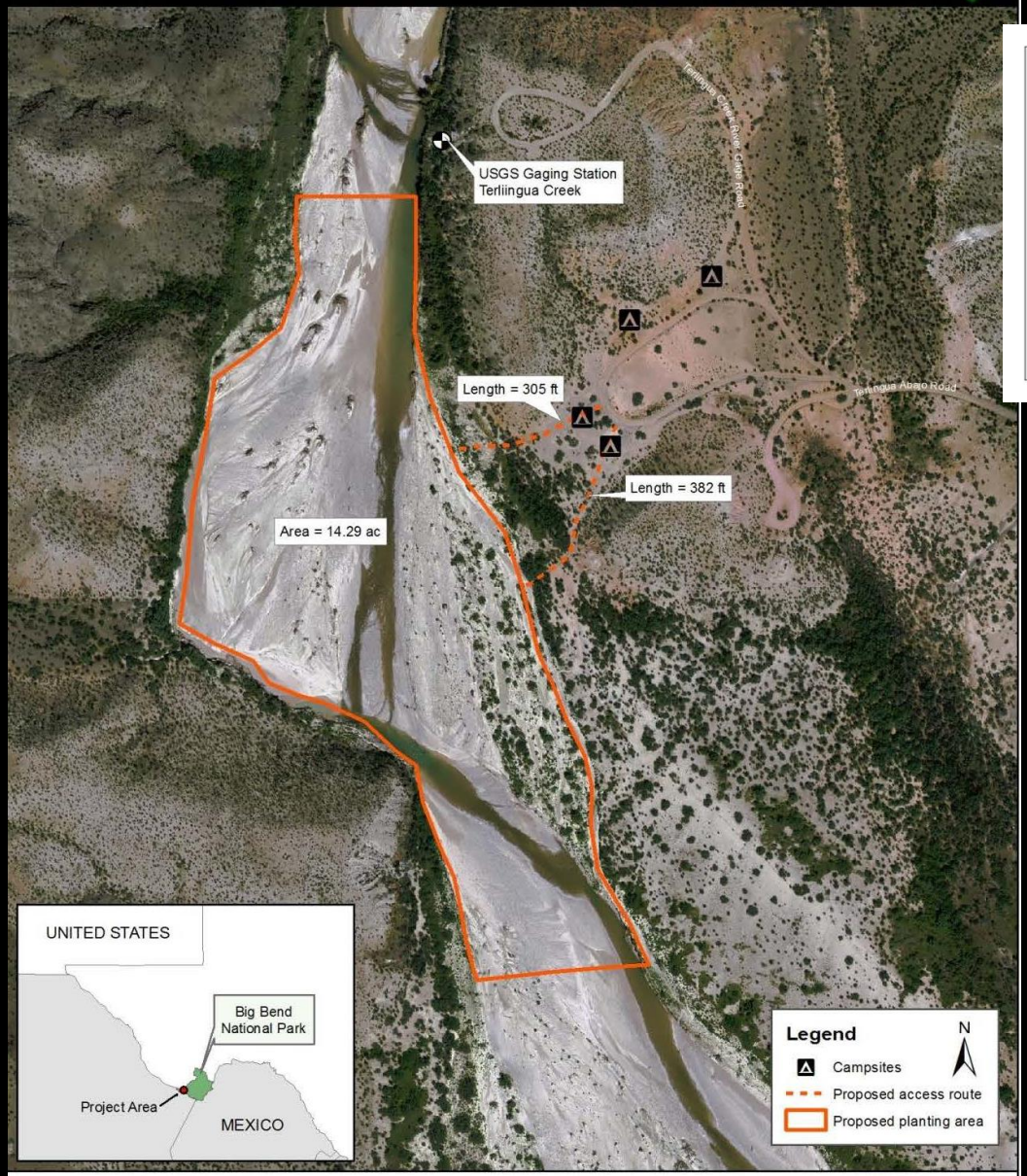
After Planting

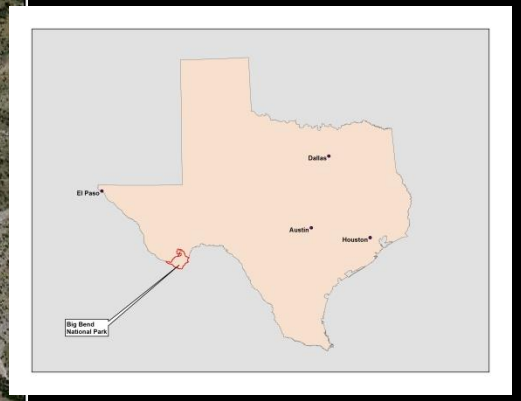
- Monitoring
  - Vegetation
  - Photo
- Maintenance
  - Irrigation
  - Vegetation
- Continue Restoration Efforts

Terlingua Creek

CEC Willow Project
Big Bend National Park, Texas

National Park Service
U.S. Department of the Interior





Produced by Big Bend National Park, Texas

Data Sources: NPS/BIBE Park Data, 3001 High Resolution Orthoimage

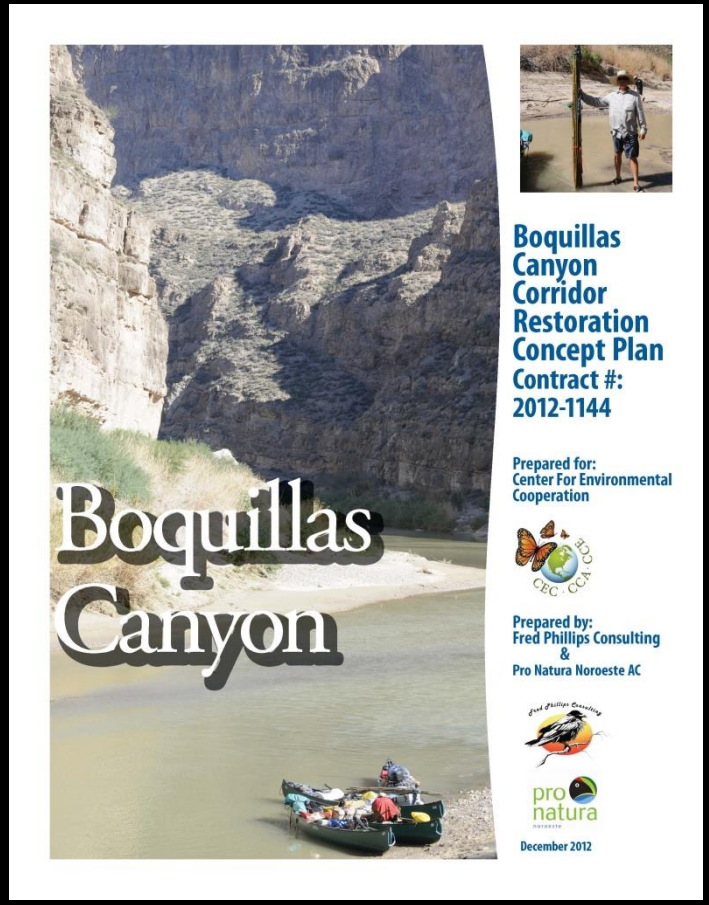
0 150 300 600 ft
0 50 100 200 m

Scale 1:3,000
January 2014

CEC_Willow_project_2013.mxd

Overview of Big Bend

- Multi-National planning effort- Commission for Environmental Cooperation
- FPC worked with Big Bend NP to write Boquillas Canyon Restoration Plan
- Terlingua Creek restoration was a part of the vision
- FPC hired in March 2014 to complete Terlingua Creek restoration



Terlingua Creek History

- Historically cottonwood and willow
- Mining and agricultural practices harvested trees
- Land protected, but native vegetation has not returned
- Believed that historic riparian forest provided conditions to sustain native forests
  - Reducing hydrologic forces during high flows
  - Allowed aquifer recharge

Project Goals

- Re-establish riparian vegetation
- Capture sediment using planting techniques
- Increase habitat for yellow-billed cuckoo and gray hawk
- Learn from initial planting effort to guide future restoration efforts

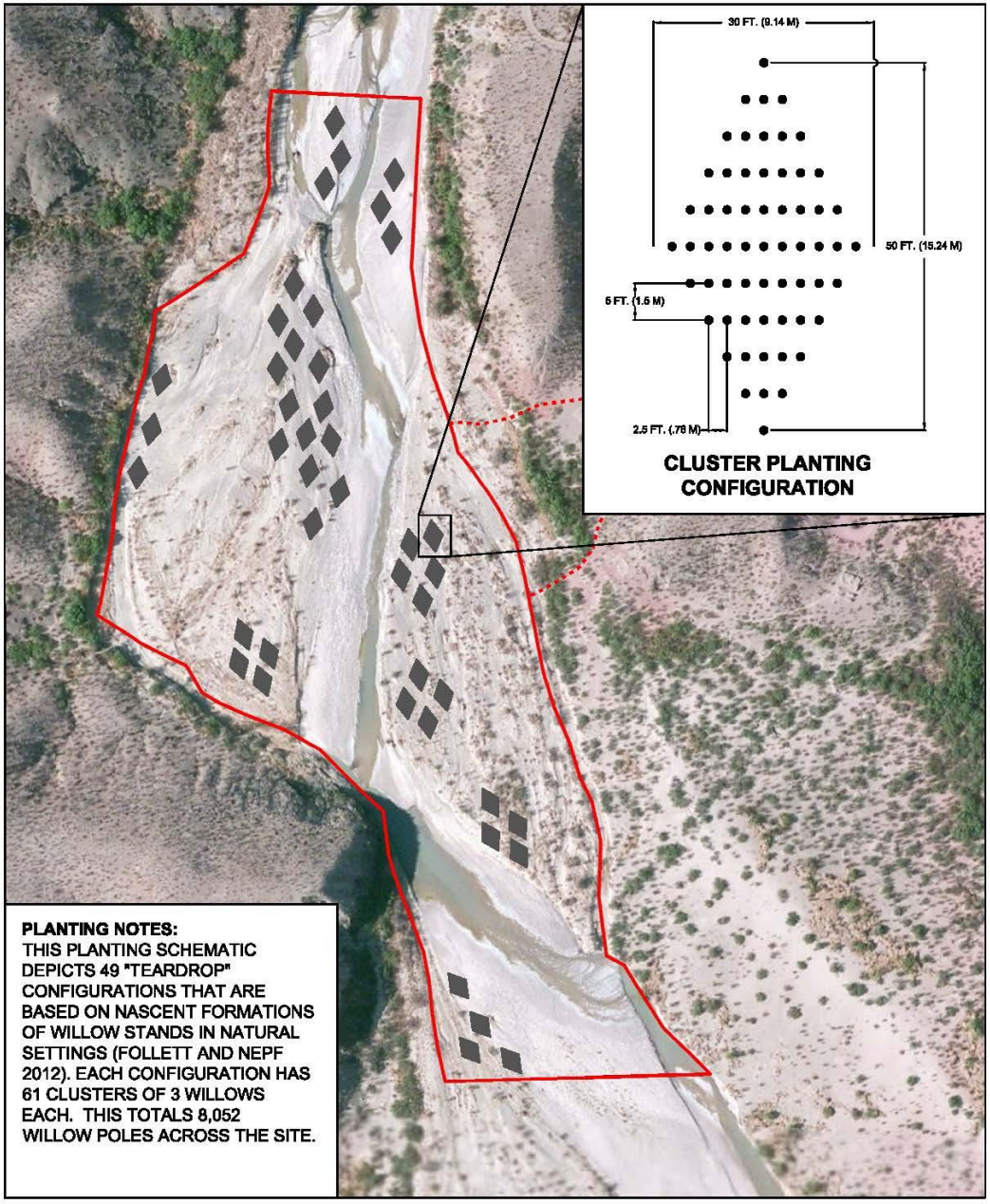
Rapid Site Assessment

- Soil Sampling
  - Cobble substrate
  - DTW 5’
  - Can’t use hand tools to excavate
- Photo monitoring

Willow Pole Harvest Sites

Planting Design

- Design developed with USGS hydrologists
- Mimic shape of emergent islands that form from sediment deposition (Follet and Nepf 2012)
- 49 teardrops; 61 bundles of 3 poles
- 8,052 willow poles



Harvesting Poles

- Harvest poles at selected sites
- Only harvest 10% of stand
- Soak poles for 3-7 days prior to planting

Planting the site

- Planting during driest month
- Larger poles on upstream half of diamond
- Poles planted 60’ angle downstream
- Plant in water table

Current Status

- Planting the site
  - 5 weeks to plant with 4 person crew
  - ¾ diamond per day
- Confirm depth to groundwater
- Adjust planting design

After Planting

- Monitoring
  - Photo
  - Vegetation
- Plant Maintenance

Acknowledgements

- Commission for Environmental Cooperation
- Big Bend National Park
  - Jeff Bennett
  - Joe Sirotnak
- Jack Schmidt- US Geological Survey
- Dr. Dave Dean- US Geological Survey

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